6200 SOUTH
TRAFFIC ANALYSIS

Prepared for:

City of Taylorsville

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Prepared By:
Korve Engineering
935 E. South Union Avenue, Suite D-203
Midvale, UT 84047
(801) 569-2131
(801) 569-2149 Fax

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Introduction

This report evaluates traffic conditions along 6200 South between 2700 West and Redwood Road in Taylorsville, Utah. In November 2005, 6200 South was re-striped to create a second westbound through lane. The purpose of this study is to complete an independent evaluation of the traffic and safety impacts associated with this re-striping project. Specifically, Korve Engineering, Inc. was asked to evaluate whether the new lane has increased traffic/pedestrian hazards, traffic volumes, and/or traffic speed on 6200 South.

6200 South has 59 feet of pavement. The prior three-lane section between 2700 West and Redwood Road was allocated with one 11-foot center left turn lane, one 11.5-foot travel lane in each direction, and two 12.5-foot shoulders. The current four-lane cross-section consists of two 12-foot travel lanes westbound, a 12-foot center two-way left turn lane, one 12-foot eastbound lane, and two 5.5-foot shoulders. As a result of the re-striping on 6200 South, the intersection at Redwood Road has not changed, but the previous westbound right turn lane on 6200 South has been converted to a through/right shared lane at 2200 West and 2700 West. The southbound right turn from Redwood Road to westbound 6200 South has a free channelized right turn lane, but before the re-stripe traffic had to merge into the single westbound lane west of the intersection. Less congestion occurs since the re-striping with the second westbound lane because now traffic does not have to merge into a single lane. Figures 1 and 2 show the previous and current lane geometry at the three key intersections along 6200 South. Figure 3 illustrates the prior and existing cross-section on 6200 South.

The stretch of 6200 South between 2700 West and Redwood Road consists mainly of single family homes. However, a Junior High School, Elementary School, apartment complex, and two churches are also located along the road. The schools were involved in the re-striping process at these intersections, and the number of traffic lanes that students have to cross on 6200 South at 2200 West and 2700 West has not changed with the re-striping project last November. Also, pedestrian countdown timers were installed at the 2200 West intersection so that crossing guards can see how much time they have before the signal turns red.

UTA Bus Route 48 travels along 6200 South between Redwood Road and 2700 West. This is an express bus route between West Jordan and Salt Lake City with eastbound trips during the morning peak hour and westbound trips during the p.m. peak. There is still adequate room for a bus to stop at a bus stop on 6200 South without significantly impacting traffic flow in the adjacent travel lane.

Traffic and Pedestrian Safety

Traffic crash data on 6200 South from 2003 through February 2006 was obtained from Salt Lake County. The number of accidents during the first three full months (Dec. – Feb.) after 6200 South was re-striped was compared to the number of accidents in three-month periods during the previous three years. This traffic collision data is presented in Table 1. The 6200 South re-striping project occurred in November of 2005 and took approximately a week to complete. Therefore, the data from November was excluded to avoid including potential construction related accidents.

There were 20 accidents during the three months immediately following the re-striping of 6200 South, which is slightly lower than the average number of accidents every three months during the three years prior to 6200 South being re-striped, 21.5. However, firm conclusions cannot be drawn from this data.

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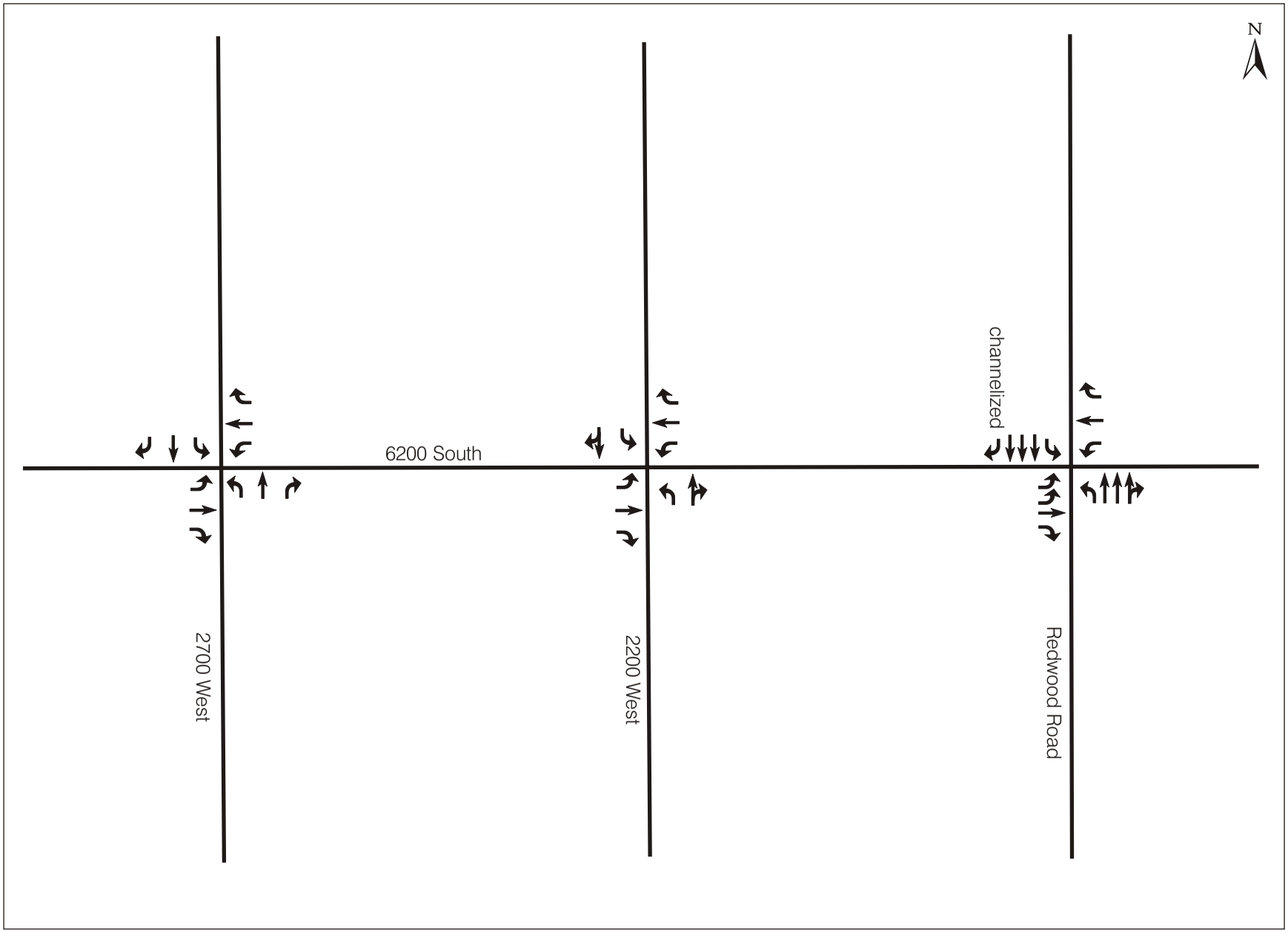

6200 SOUTH TRAFFIC STUDY

Figure 1

PREVIOUS 2004 LANE GEOMETRY

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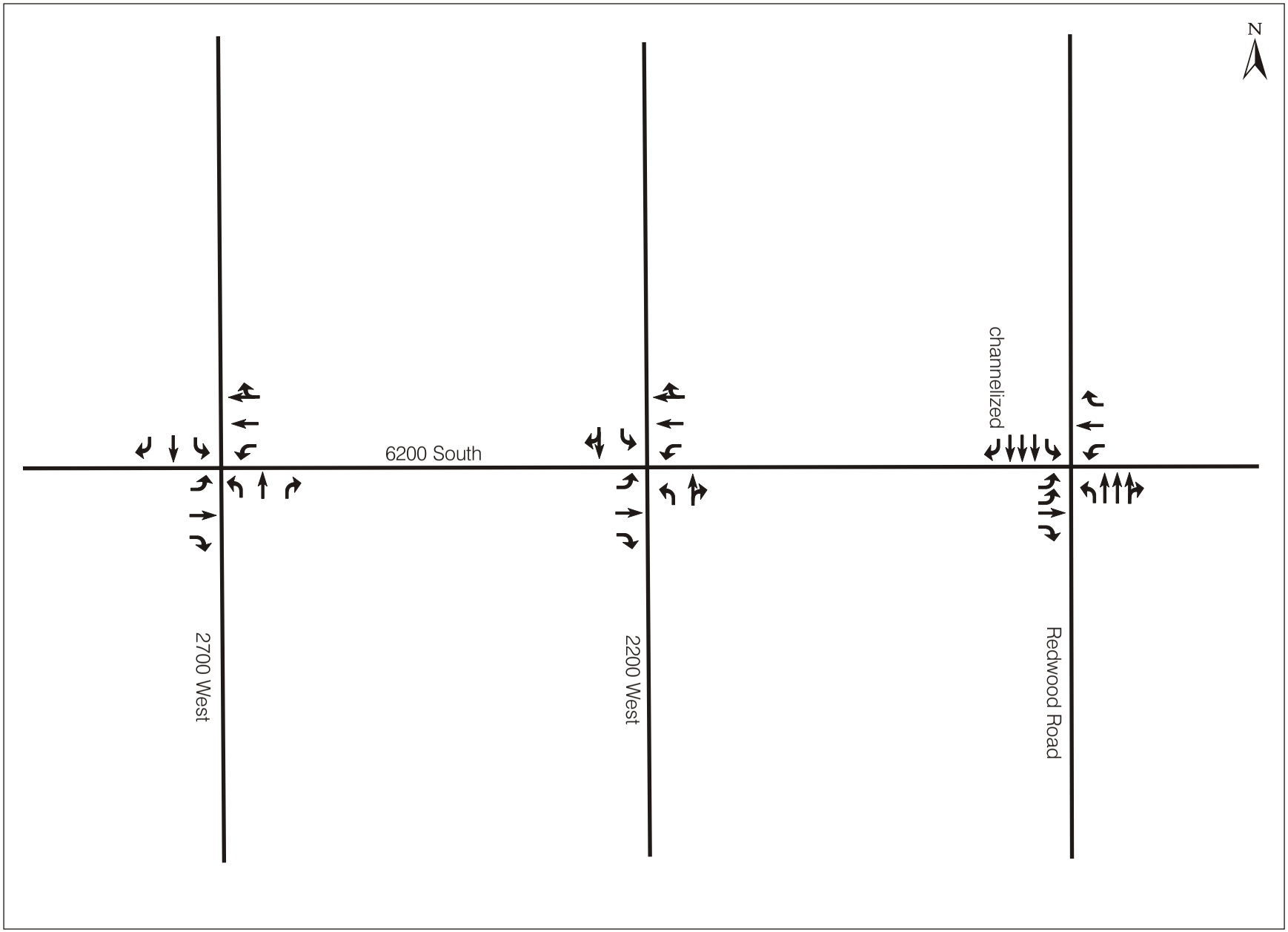

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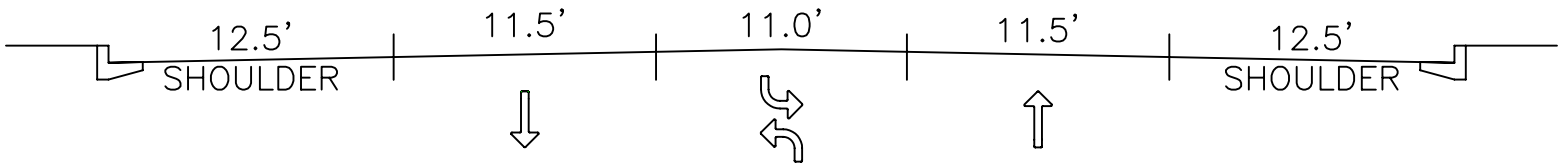
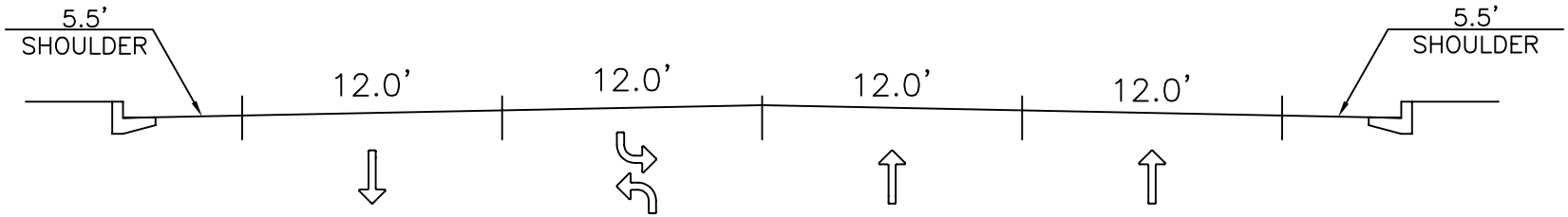
Figure 2

EXISTING 2006 LANE GEOMETRY



PRIOR CROSS-SECTION



4 LANE CROSS-SECTION
(EXISTING SINCE NOVEMBER 2005)

6200 SOUTH TRAFFIC STUDY

Figure 3

CROSS-SECTIONS

As can be seen in Table 1, the number of accidents varies greatly over any three-month period. From February 2003 to October 2005 the number of accidents every three months varied from 9 to 37. Three months is not a long enough period for an after study to determine whether the re-striping of 6200 South affected the number of accidents in the area.

TABLE 1
6200 South Accident Data

Time Period	# of Accidents
2/03-4/03	19
5/03-7/03	9
8/03-10/03	17
11/03-1/04	20
2/04-4/04	25
5/04-7/04	22
8/04-10/04	12
11/04-1/05	22
2/05-4/05	28
5/05-7/05	37
8/05-10/05	26
Average	**21.5**
12/05-2/06	**20**

Re-striping to provide a second westbound lane reduced the shoulders on the street from 12.5 feet to 5.5 feet, which makes it more difficult to back out of a driveway onto 6200 South. However, the change does not appear to have changed the number of accidents. Most of the accidents on 6200 South prior to the re-striping project were rear-end type accidents that occurred because of congestion on the street. It is anticipated that this type of accident would decrease in the westbound direction because there is now less congestion.

In addition to the number of accidents, the severity of accidents was also analyzed. Accident severity is rated in terms of injuries on a scale from 1 to 5 with 1 being an accident resulting in no injuries and 5 being an accident resulting in fatality. The accident severity data was analyzed in three-month increments in the same manner as the number of accidents. The number of accidents by severity in each three-month increment during the study period is shown in Table 2. The percentage of the accidents in each severity type for each time period is shown in parentheses.

TABLE 2
Accident Severity

Severity Type	2/03-4/03	5/03-7/03	8/03-10/03	11/03-1/04	2/04-4/04	5/00-7/04	8/04-10/04	11/04-1/05	2/05-4/05	5/05-7/05	8/05-10/05	**Avg.**	**12/05-2/06**
1. No Injury	12 (63%)	6 (67%)	13 (76%)	14 (67%)	12 (48%)	16 (72%)	9 (75%)	16 (72%)	22 (79%)	33 (87%)	22 (85%)	**15.9 (73%)**	**12 (60%)**
2. Possible Injury	4 (21%)	3 (33%)	2 (12%)	7 (33%)	10 (40%)	3 (14%)	2 (17%)	4 (18%)	3 (11%)	3 (8%)	3 (11%)	**4 (18.5%)**	**6 (30%)**
3. Bruises/ Abrasions	3 (16%)	0 (0%)	2 (12%)	0 (0%)	3 (12%)	3 (14%)	0 (0%)	1 (5%)	0 (0%)	0 (0%)	0 (0%)	**1.1 (5%)**	**2 (10%)**
4. Broken Bones/Bleeding	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (8%)	1 (5%)	2 (7%)	2 (5%)	1 (4%)	**0.6 (3%)**	**0 (0%)**
5. Fatal	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)	0 (0%)	0 (0%)	**0.1 (0.5%)**	**0 (0%)**

Tables 1 and 2 illustrate that the number and severity of accidents in the short period since 6200 South has been re-striped has not changed significantly. Like the total accident data analyzed earlier, the accident severity data varies greatly over any three-month period. For example, the percentage of category 1 severity varied from 48 percent to 87 percent during the period analyzed. All of the accident category percentages during the three-month period following the re-striping fall within the range of values from the previous three years. Therefore, the accident severity percentages during the three months since the re-striping of 6200 South do not indicate that the severity of accidents has changed significantly. More time is required to determine the impacts the re-striping has on accident severity.

Next to the two schools the potential interaction between vehicles and pedestrians crossing 6200 South is not expected to change significantly with the recent re-striping, primarily because the number of traffic lanes that must be crossed has not changed at 2200 West or 2700 West. At both intersections the westbound right turn lane was just converted to a through/right turn lane. Traffic is now closer to the pedestrians that are walking along 6200 South, but many roadways throughout the country have less than the 5.5-foot shoulder which is currently provided along 6200 South. The vast majority of pedestrians that are hit by a vehicle walking along a road are caused by an impaired motorist or someone that loses control of their vehicle and it is not anticipated that the number of these types of accidents would change significantly by changing from a 12.5 to 5.5-foot wide shoulder.

It should be noted that the accident data provided by Salt Lake County does not include, speed, direction, or type of the accidents. This data can be obtained from the Utah Department of Transportation (UDOT), but UDOT accident data is released on a yearly basis. It will not be available until the beginning of the next calendar year. Once the data is available, it will be important to evaluate accidents by direction in order to determine whether the extra westbound lane increased or decreased the accidents in that direction. Also, it will be important to evaluate accidents by time to determine whether accidents have increased or decreased during the morning and evening peak hours and during times when students are walking to and from school. In addition, it will be important to evaluate whether certain types of accidents have increased because of the new roadway configuration. Specifically, it should be examined whether rear-end collisions increased or decreased in the westbound direction with the additional lane and whether accidents caused by residents backing out of driveways have increased because of the smaller shoulder widths.

Because neither the total number of accidents nor the percentage of severe accidents has changed significantly since 6200 South was re-striped, it is recommended that the road be left in its current configuration. Safety on this road should be re-evaluated when more detailed accident data is available.

Traffic Volume

Traffic volume data was collected by Salt Lake County by direction at two locations along this segment on 6200 South from February 27, 2006 through March 3, 2006. Table 3 shows the daily traffic volumes that were collected. Korve was not able to obtain any directional traffic counts on this segment of 6200 South before it was converted from a three-lane to a four-lane cross-section. However, there was a two-way count completed by Salt Lake County at the same location in March 2000, and that count was slightly higher than the recent traffic count after the re-striping project.

TABLE 3
6200 South Daily Traffic Volume Data
February 28 - March 2, 2006

Location	Tuesday	Wednesday	Thursday	Average
Eastbound at 2045 West	14,309	14,871	15,020	14,733
Westbound at 2042 West	13,823	14,078	14,371	14,091
Total 2-Way	28,132	28,949	29,391	28,824
Eastbound at 2379 West	11,358	11,749	11,866	11,658
Westbound at 2378 West	10,705	11,155	10,982	10,947
Total 2-Way	22,063	22,904	22,848	22,605

March 14 - March 16, 2000

Location	Tuesday	Wednesday	Thursday	Average
Total 2-Way at 2378 West	23,172	23,150	24,546	23,623

It is interesting to note, as shown in Table 3, that the recent directional traffic counts indicate that there is slightly more traffic traveling eastbound with one traffic lane than there is westbound with two traffic lanes. Therefore, based on the information available there is no indication that adding roadway capacity in the westbound direction has increased the traffic volumes.

On February 22 and 23, 2006 Korve Engineering completed manual a.m. and p.m. peak period intersection traffic counts at the key intersections on 6200 South (2700 West, 2200 West, and Redwood Road). These traffic volumes were compared to traffic counts completed by Korve in May 2004. Figure 4 presents the peak hour traffic counts collected in 2004 and the same data collected in 2006 is presented in Figure 5. It is important to note that traffic volumes vary from day to day, so the traffic counts are just a snap shot of the specific day that was counted. A comparison of the manual counts indicated that the through traffic volumes on 6200 South increased from 2004 to 2006, which is expected because of continued development west of the study area. However, it is very difficult to draw any conclusions from a single count regarding the impact the striping change had on traffic volumes on 6200 South.

Traffic Speed
Salt Lake County also collected speed data by direction at the same time that they collected the traffic volume data. However, no traffic speed data was collected on 6200 South before the re-striping was completed. Therefore, it is not possible to directly compare travel speeds with one or two westbound lanes. As shown in Table 4, the average travel speeds on 6200 South are four to six miles per hour higher in the westbound direction compared to the eastbound direction. It should be noted that there is considerably more traffic westbound than eastbound between 9:00 p.m. and 6:00 a.m. During this time period travel speeds in both directions are higher because there are less conflicts and traffic. Also, there is more traffic capacity westbound with a second lane so travel speeds do not drop below the posted speed limit during peak periods as they do in the eastbound direction. It is important to note that the travel speed on many if not most roads in the Salt Lake valley exceeds the posted speed limit if there is not traffic congestion that restricts the speed.

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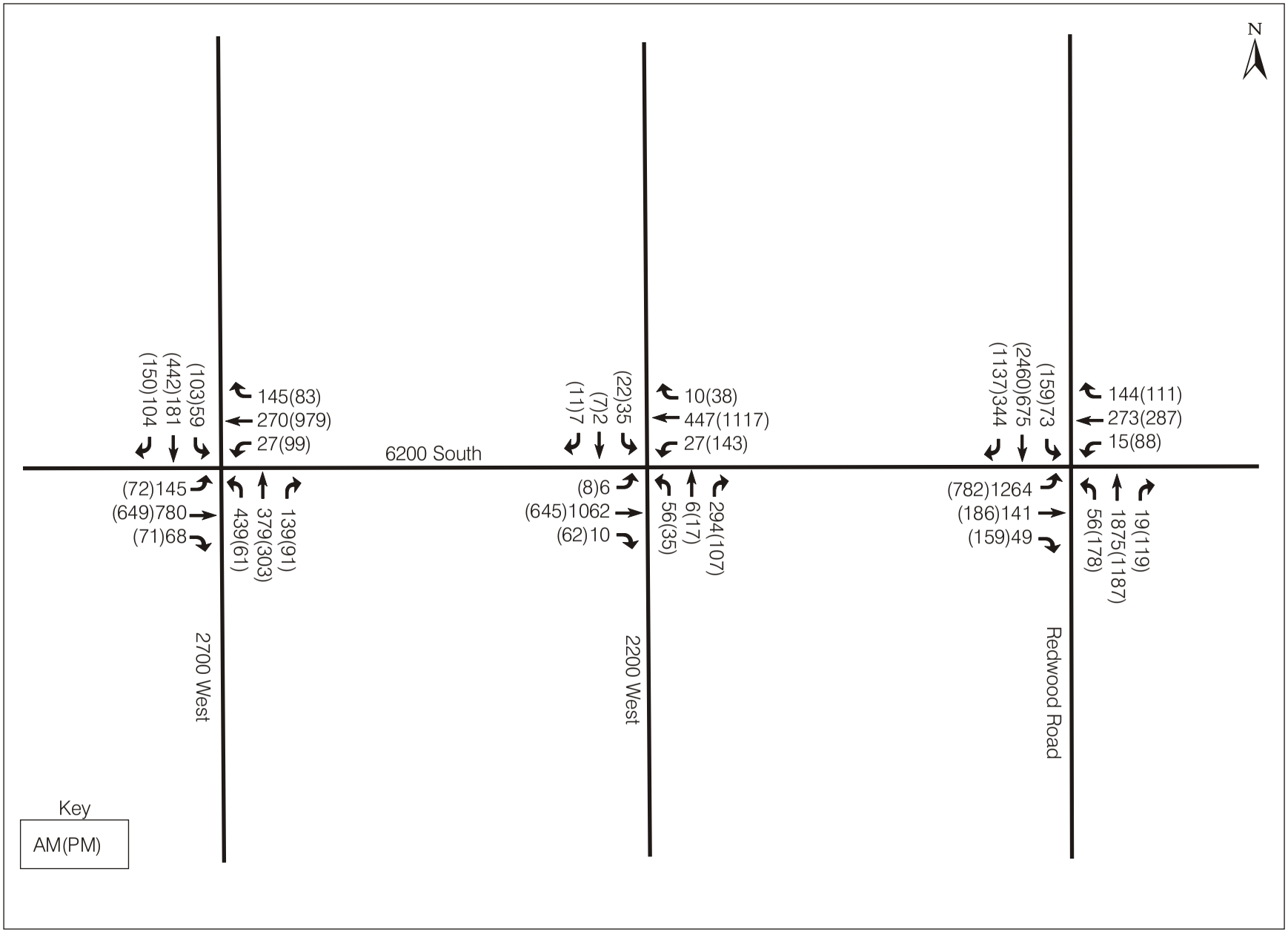

6200 SOUTH TRAFFIC STUDY

Figure 4

2004 TRAFFIC VOLUMES

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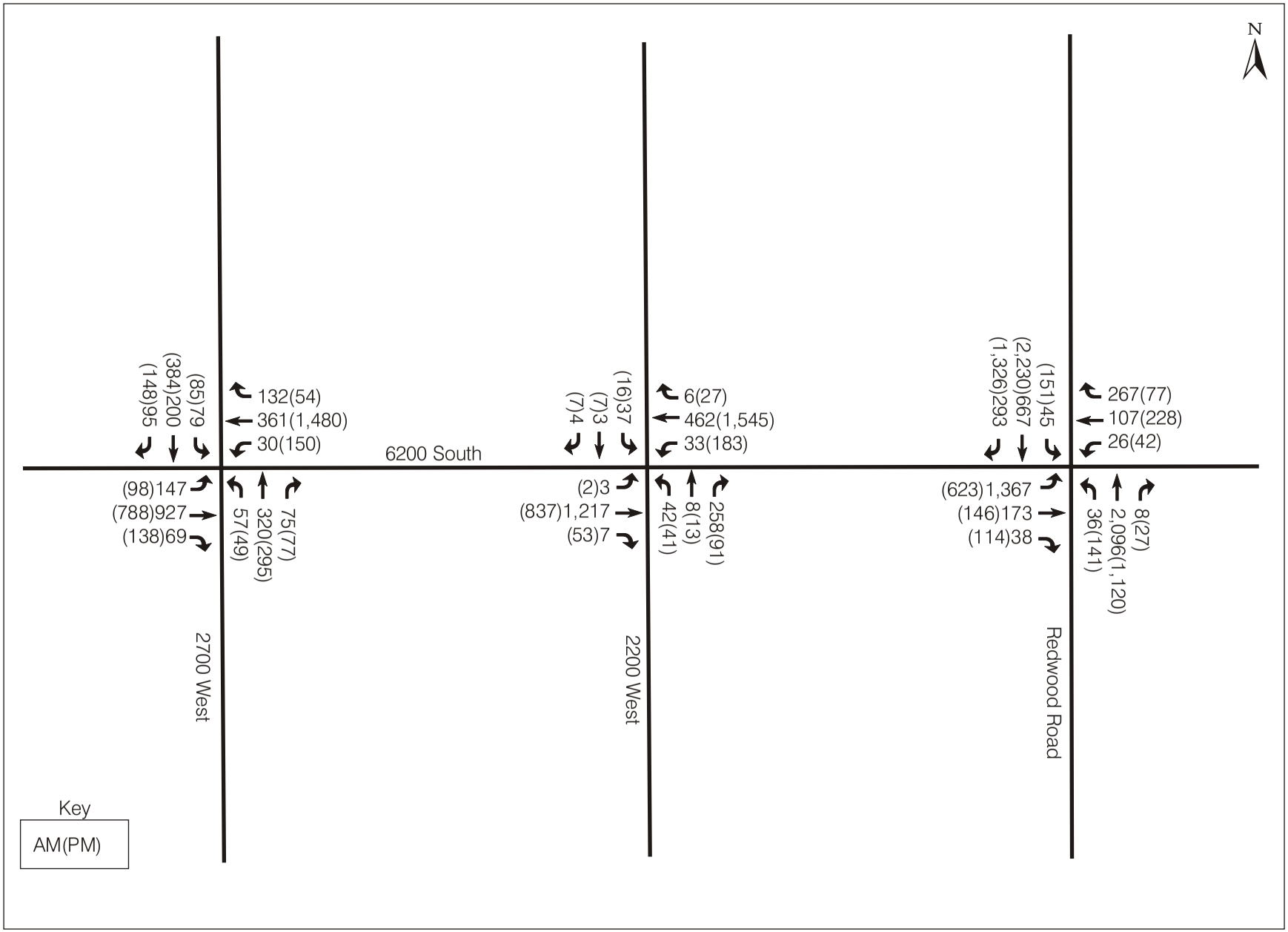

6200 SOUTH TRAFFIC STUDY

Figure 5

EXISTING 2006 TRAFFIC VOLUMES

Table 4
6200 South Traffic Speed Data – Total
February 27 - March 3, 2006

Location	Average Speed	10 MPH Pace Speed	Percent in Pace	Percent of Traffic Greater than 35 MPH
Eastbound at 2045 West	36 MPH	31-40 MPH	75.5%	53.9%
Westbound at 2042 West	40 MPH	36-45 MPH	73.2%	86.2%
Eastbound at 2379 West	35 MPH	31-40 MPH	65.2%	57.4%
Westbound at 2378 West	41 MPH	36-45 MPH	72.8%	89.9%

Table 5 shows the percentage of traffic traveling in a certain speed range by time of day. A.m. (7:00-9:00) and p.m. (4:00-6:00) peak periods as well as the period from 2:00 to 4:00 p.m. when students are walking home from school were specifically examined. It should be noted that the 2:00-4:00 data were included in the off-peak data. The data from Salt Lake County was presented in range format rather than a specific speed for every vehicle counted.

Table 5
6200 South Traffic Speed Data – By Time

Location	Time Period	< 25 mph	26 – 35 mph	36 – 45 mph	> 45 mph
Eastbound at 2045 West	a.m. peak	3.7%	64.7%	31.2%	0.4%
	2:00 p.m. – 4:00 p.m.	2.0%	50.9%	46.2%	0.9%
	p.m. peak	1.7%	50.4%	46.7%	1.2%
	Off peak	1.8%	39.5%	56.4%	2.3%
Westbound at 2042 West	a.m. peak	1.0%	14.1%	70.4%	14.5%
	2:00 p.m. – 4:00 p.m.	5.6%	16.1%	67.5%	10.8%
	p.m. peak	1.0%	18.1%	72.0%	9.0%
	Off peak	1.5%	10.8%	74.3%	13.5%
Eastbound at 2379 West	a.m. peak	44.2%	27.5%	27.4%	0.8%
	2:00 p.m. – 4:00 p.m.	7.9%	42.7%	48.4%	1.1%
	p.m. peak	4.0%	39.9%	54.8%	1.4%
	Off peak	6.4%	34.7%	56.1%	2.8%
Westbound at 2378 West	a.m. peak	1.7%	10.2%	73.4%	14.7%
	2:00 p.m. – 4:00 p.m.	2.4%	11.7%	74.5%	11.4%
	p.m. peak	2.1%	10.5%	74.5%	12.9%
	Off peak	2.1%	7.0%	72.3%	18.6%

As stated earlier, because no speed data is available on 6200 South before the road was re-striped, it is not possible to determine if the addition of a second westbound lane has increased or decreased westbound travel speeds.

Conclusion

Based on the limited data that is currently available, it is not possible to conclusively determine if converting 6200 South from a three-lane to a four-lane cross-section had any significant impact on safety, traffic volumes, and/or travel speeds on 6200 South. The average travel speeds in the westbound direction on 6200 South are higher than the posted speed limit; however, the lack of data from before the re-striping does not allow the ability to make any conclusions about the impact the re-striping had on travel speeds. Based on the information available there is no indication that adding roadway capacity in the westbound direction has increased the traffic volumes on the street. The accident data should be reevaluated again in a year or two to determine if there has been any statistically significant change in the number or severity of accidents in the study area. In the three months since the road was re-striped, the total number of accidents and the severity of accidents has not changed significantly. There is no indication that pedestrian safety has been affected by the re-striping. Therefore, at this time based on this preliminary analysis it is recommended that the roadway stay in its current four-lane configuration.